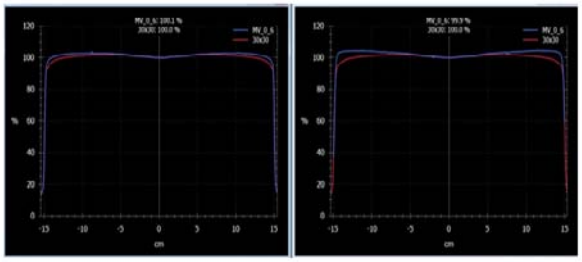
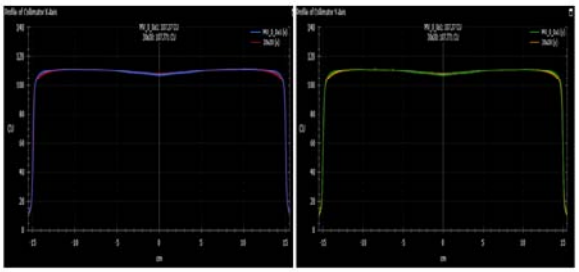
effect of the diagonal profile calibration in the dose measurements.

Results: Measurements of open fields showed an over-response (>3%) between measured and predicted doses at distances beyond 5 cm from CAX for IDU20 and beyond 10 cm from CAX for DMI calibrated with dmax profiles. Profile analysis for a 30x30 cm2 field IDU20 panel calibrated using the d5 diagonal profile showed an improved match (<3%) up to X=12 and Y=8 cm for 6X and up to X=13 and Y=9 cm for 10X. The improvement for the DMI panel was up to 15 cm and 14 cm for 6X and 10X, respectively, in both X and Y (Fig. 1)

(a)



(b)



The backscatter from the IDU20 panel is not corrected with this method and resulted in an increased discrepancy in the Y direction. For the DMI panel, which has reduced backscatter, the calibration with the d5 profile yielded an excellent match between predicted to measured dose. Furthermore, for the DMI panel, the open fields gamma analysis improved by up to 5.3% for 6X and 15.2% for 10X. The test fluence patterns resulted in an improvement of up to 7.5% for 6X and 6.6% for 10X (Table 1).

Gamma analysis open fields (3%-3mm, 5% thresh.)				
Fluence field	Diagonal d=dmax		Diagonal d=5 cm	
Imager (X x Y)	6X	10X	6X	10X
Open 3 x 3	100.0%	100.0%	100%	100.0%
Open 5 x 5	100.0%	100.0%	100%	100.0%
Open 10 x 10	100.0%	100.0%	100%	100.0%
Open 15 x 15	100.0%	98.5%	100%	98.9%
Open 20 x 20	100.0%	97.2%	100%	98.0%
Open 30 x 30	94.7%	83.2%	100%	98.4%
Aida (25x12)	100.0%	100.0%	100.0%	100.0%
Chair (12x20)	99.9%	99.8%	99.9%	100.0%
Open (30x20)	100.0%	95.8%	100.0%	100.0%
Gradient (18x26)	100.0%	97.9%	100.0%	100.0%
Steps (30x16)	99.9%	94.4%	100.0%	98.3%
Steps (40x16)	88.1%	84.4%	95.6%	91.0%

Conclusion: The calibration of the imager panel using a diagonal profile at depth of d5 cm instead of the recommended depth of dmax resulted in an improved match between measured and predicted images for larger fields without affecting the results for smaller fields.

EP-1604

Evaluation of safety by skin dosimetry in Intraoperative Radiotherapy for breast cancer patients

I.H. Jung[1]
[1]*Gangnam Severance Hospital Yonsei Uinersity Health system, Radiation Oncology, Seoul, Korea Republic of*

Purpose or Objective: We investigated the safety of Intrabeam™ system, X-ray unit for intraoperative RadoioTheray (IORT) by measuring surface dose using Optically Stimulated Luminescent Dosimeter(OSLD).

Material and Methods: 30 patients were selected, who were in breast cancer patients and had an operation of breast conserving surgery (BCS). At the inner surface of tumor bed, 20 Gy were described, and 5 Gy at 1cm depth from the inner surface. Along the the size of tumor bed which could be decided after resection of tumor, the size of applicator were determined. Usual treatment time were from 18 to 40 minitutes. For the measurement of surface doses, OSLD were placed at superior (U1,2), inferior(D1,2), lateral(L1,2) and medial(M1,2) directions from the center of applicator. Each direction, two OSLD were placed at 0.5 cm and 1.5 cm from the center. Mean, maximum, and minimum doses were analyzed to be compared.

Results: Mean values were U1 2.23±0.80 Gy, U2 1.54±0.53 Gy, D1 1.73±0.63 Gy, D2 1.25±0.45 Gy, L1 1.95±0.82 Gy, L2 1.38±0.42 Gy, M1 2.03±0.70 Gy, and M2 1.51±0.58 Gy. Maximum values were 4.34 Gy at U1, and Minimum values were 0.45 Gy at M2. 13.3 % of patient (4pts out of 30) were reported that surface dose were over 4 Gy.

Conclusion: The fact that skin dose of all patients were less than 5 Gy based on OSLD measurement showed the safety of Intrabeam™ system. In the relatively small breast volume, the tendency that surface dose was increased had been shown, which was analyzed by the data of patients who irradiated over 4 Gy at skin surface. Therefore, for appropriate indication for IORT, it is suggested that breast volume as well as the size and position of tumor should be carefully considered.

Electronic Poster: Physics track: Radiation protection, secondary tumour induction and low dose (incl. imaging)

EP-1605

Dose from kV cone beam CT to lens, breast and gonads for children using different standard protocols

M.S. Assenholt[1], R. Hansen[1], J. Hansen[1]
[1]*Aarhus University Hospital, Cancer Department, Aarhus N, Denmark*

Purpose or Objective: With daily image guided kV cone-beam computed tomography (kVCBCT), dose to organs near the target can exceed 1 Gy during a treatment with 30 fractions. Treatment with proton radiation reduces the dose outside the tumor, and reducing the dose from kVCBCT gets even more relevant. Reducing the dose from kVCBCTs can be done by shrinking the area that receive kVCBCT or lower the dose used for the uptake of kVCBCT. Prior study showed that the mAs used for kVCBCT can be greatly reduced without reducing the image quality (B. Loutfi-Krauss, 2015). This study have measured and compared the dose to organs at risk in children using different kVCBCT protocols.

Material and Methods: The dose from kVCBCTs in the Varian TrueBeamTM accelerator were measured with thermolumenesence detectors (TLD), for lens, breast and gonads on CIRS anthromorphic children phantoms age 1, 5 and 10 years.
The kVCBCTs where performed with three different standard protocols: Head 1, Head 2, Thorax and Pelvis. In table 1 the settings for the different protocols can be seen.